Electronic Version
Stylesheet Version v1.1.1

Claims

[c1] 1. An implantable cardiac stimulator comprising

a control circuit,

an output circuit controlled by said control circuit and adapted to be connected to at least one electrode implanted near the heart,

at least one sense amplifier comprising an operational amplifier in electrical communication with said control circuit through a plurality of outputs and having a plurality of inputs, each of said inputs being adapted to be connected to one of a plurality of electrodes,

said sense amplifier having a plurality of double throw switches, each of said double throw switches being connected to select an input in one position and to connect to an electrical ground in a second position.

[c2] 2. The implantable cardiac stimulator of claim 1 wherein said double throw switches select an input by connecting an input to said operational amplifier.

[c3] 3. The implantable cardiac stimulator of claim 2 further comprising a plurality of feedback capacitors connected

between an output of said operational amplifier and an inverting input of said operational amplifier and a plurality of feedback capacitor switches, each of said feedback capacitor switches being in series with a feedback capacitor.

[c4] 4. The implantable cardiac stimulator of claim 3 further comprising a plurality of feedback resistors each of said resistors being in parallel with one of said feedback capacitors and one of said feedback capacitor switches.

[c5] 5. The implantable cardiac stimulator of claim 4 further comprising a plurality of feedback selection switches, each one of said feedback selection switches being connected in series between the output of said operational amplifier and one of said feedback capacitors and between the output of said operational amplifier and said feedback resistor which is in parallel with said one of said feedback capacitors.

[c6] 6. The implantable cardiac stimulator of claim 5 further comprising a plurality of output switches, one side of each of said output switches being connected between the output of said operational amplifier and one of said feedback capacitors and a second side of said output switch being connected to one of said plurality of outputs.

[c7] 7. The implantable cardiac stimulator of claim 6 wherein said one side of each of said output switches is further connected between a feedback resistor and a feedback capacitor switch.

[c8] 8. The implantable cardiac stimulator of claim 7 wherein said one side of each of said output switches is further connected between one of said feedback selection switches and one of said feedback capacitors.

[c9] 9. The implantable cardiac stimulator of claim 4 further comprising a plurality of output switches, one side of each of said output switches being connected between the output of said operational amplifier and one of said feedback capacitors and a second side of said output switch being connected to one of said plurality of outputs.

[c10] 10. The implantable cardiac stimulator of claim 9 further comprising a plurality of resistors, one end of each one of said resistors being connected between said second side of an output switch and an output and a second end of said of each one of said resistors being connected to ground.

[c11] 11. The implantable cardiac stimulator of claim 1 wherein said double throw switches select an input by

connecting an output to an output of said operational amplifier.

[c12] 12. The implantable cardiac stimulator of claim 11 further comprising a plurality of feedback capacitors connected between an output of said operational amplifier and an inverting input of said operational amplifier and a plurality of feedback resistors each of said resistors being in parallel with one of said feedback capacitors.

[c13] 13. The implantable cardiac stimulator of claim 12 further comprising a plurality of feedback selection switches, each one of said feedback selection switches being connected in series between the input of said operational amplifier and one of said feedback capacitors and between the input of said operational amplifier and said feedback resistor which is in parallel with said one of said feedback capacitors.

[c14] 14. The implantable cardiac stimulator of claim 13 further comprising a plurality of output switches, one side of each of said output switches being connected between the output of said operational amplifier and one of said feedback capacitors and a second side of said output switch being connected to one of said plurality of outputs.

[c15] 15. The implantable cardiac stimulator of claim 14 wherein said one side of each of said output switches is further connected between said one of said feedback capacitors and one of said double throw switches.

[c16] 16. The implantable cardiac stimulator of claim 15 further comprising a plurality of resistors, one end of each one of said resistors being connected between said second side of an output switch and an output and a second end of said of each one of said resistors being connected to ground.

[c17] 17. The implantable cardiac stimulator of claim 12 further comprising a plurality of output switches, one side of each of said output switches being connected between the output of said operational amplifier and one of said feedback capacitors and a second side of said output switch being connected to one of said plurality of outputs.

[c18] 18. The implantable cardiac stimulator of claim 17 wherein said one side of each of said output switches is further connected between said one of said feedback capacitors and one of said double throw switches.

[c19] 19. The implantable cardiac stimulator of claim 18 further comprising a plurality of resistors, one end of each

one of said resistors being connected between said second side of an output switch and an output and a second end of said of each one of said resistors being connected to ground.

[c20] 20. The implantable cardiac stimulator of claim 1 further comprising a plurality of sense amplifiers, each of said sense amplifiers in electrical communication with said control circuit through a plurality of outputs and each of said sense amplifiers having a plurality of inputs, each of said inputs being adapted to be connected to one of a plurality of electrodes.

[c21] 21. The implantable cardiac stimulator of claim 20 further comprising a lead having a plurality of electrodes, each of said electrodes being connected to an input of said sense amplifiers.

[c22] 22. The implantable cardiac stimulator of claim 1 further comprising a lead having a plurality of electrodes, each of said electrodes being connected to an input of said sense amplifier.

[c23] 23. An implantable medical device comprising

an electrical ground,

a plurality of electrodes,

a control circuit,

at least one sense amplifier comprising an operational amplifier in electrical communication with said control circuit through a plurality of outputs and having a plurality of inputs, each of said inputs being adapted to be connected to one of a plurality of electrodes,

said sense amplifier having a plurality of double throw switches, each of said double throw switches being connected to select an input in one position and to connect to electrical ground in a second position.

[c24] 24.An implantable medical device comprising

an electrical ground,

a plurality of electrodes,

a control circuit,

at least one sense amplifier comprising an operational amplifier in electrical communication with said control circuit and having a plurality of inputs, each of said inputs being adapted to be connected to one of a plurality of electrodes, and

means for connecting to a selected input to said sense amplifier or to connect said selected input to ground.